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REMARKS

Claims 1-63 were pending in the present Application. Claims 1-15, 32, 53-58, and 61-62 were previously withdrawn as a result of a restriction requirement, leaving Claims 16-31, 33-52, 59, 60 and 63 for consideration upon entry of the present response. Applicants appreciate the indication that Claims 24-25, 28, 41-42, 47-48 and 63 have been deemed allowable. No new matter has been introduced by way of amendment.

Reconsideration and allowance of the claims are respectfully requested in view of the above and the following remarks.

Statement Concerning Common Ownership/Joint Research Agreement

United States Patent Application Publication No. 2003/0108680, now United States Patent No. 6,974,640 to Gell *et al.* (hereinafter "Gell") is assigned to the University of Connecticut and Inframut Corporation in accordance with a joint research agreement. The instant Application (United States Patent Application No. 10/755,856) is assigned to the University of Connecticut, Inframut Corporation, and US Nanocorp, Inc. in accordance with the same joint research agreement. This joint research agreement was in place between all of the parties prior to the dates of the inventions disclosed and claimed in both Gell and the instant Application. The subject matter disclosed and claimed in the instant Application resulted from activities undertaken within the scope of the joint research agreement, and each party is named in the instant Application as an Assignee.

First Claim Rejections Under 35 U.S.C. § 103(a)

Claims 16-23, 26, 29-31, 33-36 and 59-60 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Gell. Applicants respectfully traverse this rejection.

35 U.S.C. § 103(c) allows for subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of § 102 of, to not preclude patentability where the subject matter and the claimed invention were, at the time the claimed

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invention was made, owned by the same person or subject to an obligation of assignment to the same person. For purposes of 35 U.S.C. § 103(c), subject matter developed by another person and a claimed invention shall be deemed to have been owned by the same person or subject to an obligation of assignment to the same person if: (A) the claimed invention was made by or on behalf of parties to a joint research agreement that was in effect on or before the date the claimed invention was made; (B) the claimed invention was made as a result of activities undertaken within the scope of the joint research agreement; and (C) the application for patent for the claimed invention discloses or is amended to disclose the names of the parties to the joint research agreement. See 35 U.S.C. 103 (c) as well as MPEP 2146, 706.02(l)(1), and 706.02(l)(2).

Based on the clear and conspicuous Statement Concerning Common Ownership/Joint Research Agreement above, the instant Application and Gell meet the requirements to be “deemed to have been owned by the same person or subject to an obligation of assignment to the same person”. Therefore, Gell is now disqualified as prior art against the instant Application.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection applied to Claims 16-23, 26, 29-31, 33-36 and 59-60.

Second Claim Rejections Under 35 U.S.C. § 103(a)

Claims 16, 19-20, 26-27, 29-31 and 33-36 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over a 1994 Journal of Thermal Spray Technology article entitled “Measurement and Analysis of Adhesion Strength for Thermally Sprayed Coatings” by Lin *et al* (hereinafter “Lin”). Applicants respectfully traverse this rejection.

Independent Claim 16 is directed to a material comprising splats having an average diameter of less than or equal to about 2 micrometers.

Lin is a study of the adhesion strength of thermally sprayed coatings. In the Abstract, Lin states “The minimum microstructure detail would be a single splat (often described as a lamella) which is about 5 μm (approximately 0.0002 in.) in thickness and up to 80 μm (approximately 0.003 in.) in diameter.” In making the rejection, the Examiner has relied on case law, stating that

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overlapping ranges have been found to be obvious variants without the support of unexpected results, and that a *prima facie case* of obviousness exists when the claimed ranges and the prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties.

Applicants respectfully contend that the claimed diameter range could not have been disclosed by Lin because one of ordinary skill in the art would readily appreciate that the state of the art for the processes disclosed by Lin were incapable of producing splats having an average diameter of less than or equal to about 2 micrometers. In other words, while not explicitly stated by Lin, Applicants submit that one of ordinary skill in the art in view of the disclosure of Lin would understand that the diameters of the splats created by the processes described therein would have an inherent lower limit, which would be significantly larger than that claimed by Applicants. The processes described by Applicants in the instant Application are what enable materials having splats of the claimed size. Accordingly, Lin fails to disclose or suggest all elements of Applicants independent Claim 16, and those claims dependent therefrom.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection applied to Claims 16, 19-20, 26-27, 29-31 and 33-36.

Third Claim Rejections Under 35 U.S.C. § 103(a)

Claims 37-38, 45-46 and 49-52 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Lin in view of a 2000 University of Connecticut Doctor of Philosophy dissertation entitled "Failure Modes in Plasma-Sprayed Thermal Barrier Coatings" by Schlichting (hereinafter "Schlichting"). Applicants respectfully traverse this rejection.

Independent Claim 37 is directed to a thermal barrier coating comprising splats having an average diameter of less than or equal to about 2 micrometers; a thickness of greater than about 125 micrometers; vertical cracks; and porosity of about 15 to about 40 volume%, based on the total volume of the material.

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Applicants respectfully contend that a *prima facie* case of obviousness has not been established against independent claim 16 because all elements of this claim have not been taught or suggested by the cited art. *Lin*'s failure to disclose splats having an average diameter of less than or equal to about 2 micrometers is discussed above. Schlichting fails to compensate for the deficiencies of *Lin*. Schlichting, on page 39 states: "On the macro scale the nano-coatings appearance is not much different than that of standard APS coatings. It forms a defect microstructure consisting of splat boundaries, porosity, and microcracks. On the micro scale the splats are seen to consist of some large grains surrounded by nano-grains." In addition, Schlichting states on page 74 "The grain size was measured to be approximately 1.4 μm for all samples." and further illustrates the grain size in Figure 4.1 on page 95. Once again, as discussed in Applicants' previous response dated April 27, 2006, grain size is markedly different than splat size or diameter. Each splat comprises multiple grains. Given these grain sizes, the claimed splat diameter of less than or equal to about 2 micrometers could not have been disclosed or suggested by Schlichting. Accordingly, the combination of *Lin* and Schlichting do not render independent Claim 37, and those claims dependent therefrom, obvious.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection applied to Claims 37-38, 45-46 and 49-52.

Fourth Claim Rejections Under 35 U.S.C. § 103(a)

Claims 37-40, 43-46 and 49-52 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over *Gell* in view of Schlichting. Applicants respectfully traverse this rejection.

Gell is disqualified as prior art against the instant Application.

Therefore, the rejection must be sustained using Schlichting alone. Schlichting is discussed above. Given the failure of Schlichting to disclose or suggest a thermal barrier coating, or any material for that matter, comprising splats having an average diameter of less than or equal to about 2 micrometers, a *prima facie* case of obviousness has not been established against independent Claim 37, as well as those claims dependent therefrom.

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Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection applied to Claims 37-40, 43-46 and 49-52.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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